



NS209

Operating Cranes & Plant in Proximity to Overhead Power Lines

February 2008



SUMMARY

Network Standard NS 209 provides the safety requirements for operating cranes and plant near overhead power lines by Ausgrid personnel or by others working for Ausgrid.

ISSUE

This Standard is subject to amendment by Ausgrid at any time.

Ausgrid staff: This Standard is for issue to all overhead line staff, and for reference by technical and engineering staff associated with the design and installation of overhead lines.

Where this document is issued as a controlled document replacing an earlier edition; remove and destroy the superseded document.

Accredited Service Providers and Contractors: This document is issued on an uncontrolled basis. It is the user's responsibility to ensure that the document being used is current and includes any amendments issued since the date on the document.

Ausgrid offers a subscription service which provides for updates and amendments to standards on payment of an annual fee.

Current network standards are also available on Ausgrid's Internet site at www.ausgrid.com.au.

DISCLAIMER

This Standard has been developed using information available from field and other sources and is suitable for most situations encountered in Ausgrid. Particular conditions, projects or localities may require special or different practices. Any proposed deviation from this Standard must be submitted to Ausgrid for approval before it is implemented.

It is the responsibility of all persons involved to ensure that a safe system of work is employed and that statutory requirements are met.

Ausgrid will not accept any liability for work carried out to a superseded standard. Ausgrid may not accept work carried out which is not in accordance with current standard requirements.

Ausgrid's standards are subject to ongoing review. It is possible that conflict may exist between standard documents. In this event, the most recent standard is to prevail.

INTERPRETATION

In the event that any user of this Standard considers that any of its provisions is uncertain, ambiguous or otherwise in need of interpretation, the user should request Ausgrid to clarify the provision. Ausgrid's interpretation shall then apply as though it were included in the Standard, and is final and binding. No correspondence will be entered into with any person disputing the meaning of the provision published in the Standard or the accuracy of Ausgrid's interpretation.

Network Standard NS 209
Guide for Operating Cranes Near Overhead Power Lines
February 2008

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1 INTRODUCTION

1.1 Purpose

This Network Standard together with other referenced standards and guidelines is intended to continue the provisions of the now discontinued document - Interim Guide for Operating Cranes & Plant in Proximity to Overhead Power Lines (ISSC26) for work done by Ausgrid personnel or by others working for Ausgrid.

Note: Wherever the term ISSC 26 (or its predecessor, the Certificate of Exemption No. 5099) appears as a reference in any Ausgrid document, it should be interpreted as now meaning this Network Standard (NS209).

1.2 Scope

This Network Standard applies to any work by Ausgrid personnel or by others working for Ausgrid using a crane or plant required to be carried out in proximity to live overhead electrical apparatus and which comprises:

a) Electrical work;

Work on or connected with the construction, erection, maintenance, adjustment or dismantling of electrical installations, public lighting, electric substations, high voltage areas, switchyards, electrical transmission or distribution systems and includes trimming of trees near electrical apparatus.

b) Non-electrical work

Work not directly connected with electrical systems or apparatus such as building work, landscaping, landfill work, excavations, road works and includes the construction, maintenance, adjustment or dismantling of drainage sewerage and water supply systems.

1.3 Proximity to overhead power lines

All operators of cranes or plant must be aware of the hazards of live overhead electrical apparatus. Refer to Clause 2 below.

Except where the work is being undertaken in accordance with the specific requirements and precautions of this Network Standard, cranes*, loads, plant and component parts must not approach closer to live electrical apparatus than the minimum approach distances appropriate to the voltage concerned, shown in Table A-0, below:

TABLE A-0
MINIMUM APPROACH DISTANCES OF CRANES, PLANT AND LOADS TO LIVE ELECTRICAL APPARATUS

NOMINAL VOLTAGE	MINIMUM APPROACH DISTANCE
Not exceeding 132 000V	3 metres
Above 132 000V but not exceeding 330 000V	6 metres
Above 330 000V	8 metres

Caution:

To determine the voltage level of the electrical apparatus, the operator of the crane of plant must refer to Ausgrid, unless the operator can positively identify it him/herself.

** **Note:** Grab cranes or floating cranes or their loads must not approach closer than the above minimum approach distances under any circumstances.*

1.4 Application

This Network Standard is intended to be communicated to and used by all Ausgrid employees or others who work for Ausgrid when operating cranes or plant which work, or may work, in proximity to overhead power lines.

This Network Standard should be applied on the basis that -

- appropriate workplace hazard and risk assessment and management processes are carried out; and
- the safe approach distances used are selected according to the level of qualification and training of the personnel concerned (as set out in the Network Standard), and the work to be performed.

2 GENERAL SAFETY PRECAUTIONS

Before proceeding onto a worksite with a crane or plant an inspection must be made to identify any live electrical apparatus in the area of the work. An assessment must then be made to determine if the electrical apparatus can be de-energised. If not, then the assessment is to determine if –

- (a) the provisions of this Network Standard can be implemented;
- (b) there are any factors on the worksite which could contribute to an electrical hazard; and
- (c) the crane, elevating work platform or plant can be operated within its rated load capacity while maintaining the required clearances.

Attention must also be given to the nature of the load to be moved and particular care must be taken in securing the load and maintaining clearances where the load is to be lifted over the electrical apparatus.

3 NOTIFICATION OF NEED TO WORK CLOSER THAN THE MINIMUM APPROACH DISTANCES IN THIS NETWORK STANDARD

Before commencing any work with any crane or plant which will require the crane, load or plant to approach closer than the minimum approach distances to electrical apparatus specified in Table A-0 of this Network Standard, the owner of the crane or plant, the person responsible for the operation of the crane, or the person having immediate control of the crane or plant:

- (i) must inform the organisation that owns, operates, leases or maintains the electrical apparatus in writing of the nature and duration of the intended work; and

(ii) must not proceed with such work unless approval has been granted in writing by such organisation to proceed in compliance with the conditions of this Guide and, where provided by the organisation, any further conditions imposed under Clause 4 of this Guide.

However this written notification and approval is not required for electrical work carried out by employees of Ausgrid or others working for Ausgrid on, or connected with electrical apparatus owned, leased or maintained by Ausgrid.

4 CONDITIONS OF CLOSE APPROACH TO ELECTRICAL APPARATUS

In granting permission under Clause 3 or 5 of this Network Standard, Ausgrid can impose such further conditions considered appropriate for the safe operation of the crane or plant.

5 EMERGENCY CONDITIONS

Under extenuating circumstances where there is serious and immediate risk to life, health, property or the environment, the written notification and approval required under Clause 3 of this Network Standard need not be complied with provided that the Ausgrid is given notification of the circumstances and all other provisions of this Network Standard are complied with.

6 NOTICES TO BE CARRIED AND INSTALLED ON THE CRANE OR PLANT

- a) A copy of this Network Standard must be kept in a convenient and protected location on the crane or plant so that it is readily available to all personnel concerned.
- b) The crane or plant must bear the following notices which must be located at each set of controls and which must be visible to the operator of the controls:
 - i. A warning notice as depicted in Appendix A of this Network Standard, together with
 - ii. A warning notice as set out in Appendix B of this Network Standard, advising of the provisions of the Network Standard (or, for cranes or plant commissioned before the date of introduction of this Network Standard, the equivalent existing notice installed under the provisions of the former Certificate of Exemption No. 5099). Where the crane is an elevating work platform the warning notice must be located in a visible location in or adjacent to the work basket.

7 PERSONNEL ENGAGED ON THE WORK

Whilst the crane or plant is carrying out work or preparing to carry out work in position under the provisions of this Network Standard, the following clauses must be complied with irrespective of whether the crane, load, plant or electrical apparatus is provided with effective insulation:

(a) General Requirement

All personnel engaged in the work must have been instructed in the requirements of this Network Standard and the manner of complying with these requirements.

(b) The Operator

The operator of the crane or plant or the operator of the work basket of an elevating work platform must be a person accredited or qualified under Clause 8 of this Network Standard.

(c) The Safety Observer

(i) The owner of the crane or plant, the person in charge of the work or the operator of the crane or plant is responsible for appointing a safety observer to observe the approach of the crane, plant or load to electrical apparatus and to warn the operator in sufficient time to ensure all clearances as prescribed are maintained.

(ii) The safety observer must be appointed at any time the crane, plant or load is in motion and is likely to move within the approach distances provided in Column C of Table A in Clause 13 (a).

(iii) The safety observer must be a person accredited or qualified under Clause 8 of this Network Standard.

(iv) The safety observer must not be required to carry out any other duty during the period of observance.

(v) The safety observer must not be required to observe more than one crane or plant at any period of observance.

(vi) The safety observer required under this Clause must not be located on the work basket of an elevating work platform during the period of observance.

(vii) A safety observer is not required for an item of plant which has been completely erected and comprises stationary plant which is not located below the electrical apparatus and is located horizontally outside the minimum approach distances given in Clause 13 (a).

(viii) A safety observer is no longer required after an effective limiting device has been set to prevent any component part of a crane, plant or load approaching closer than the minimum approach distances in Table A of Clause 13 (a) provided that the limiting device is effective under stress conditions and the limiting device is inspected and tested at regular intervals.

8 TRAINING OF PERSONNEL ENGAGED ON THE WORK

The operator of the crane or plant and the safety observer required by this Network Standard must have -

- (a) successfully completed a course of training known as the "Crane and Plant Electrical Safety Course" or an equivalent course which had been approved for the purpose by the then Electricity Association of NSW, or alternatively, achieved formal recognition of the necessary competencies specified for that course (i.e. "recognition of current competencies," or RCC).
- (b) within the previous twelve months demonstrated their ability to apply rescue procedure in the event of an accident associated with electrical apparatus and their ability to apply resuscitation procedure.
- (c) following completion or recognition of the "Crane and Plant Electrical Safety Course," successfully undertaken a competency assessment in the "Crane and Plant Electrical Safety Course" at an interval no greater than twelve months from the previous assessment.

However, a person who is a qualified electrical tradesperson or is trained or formally qualified to work on overhead electrical apparatus need not comply with the provisions of Parts (a) and (c) of this clause if they have received instruction in the requirements of this Network Standard and the manner of complying with these requirements.

Note: Existing training/authorisations under the former ISSC 26 and Training modules based on the former ISSC 26 are deemed to meet the requirements of this Network Standard until further notice.

9 RESPONSIBILITY FOR COMPLIANCE WITH THIS NETWORK STANDARD

Any crane load or plant which is at rest, travelling or in motion in accordance with this Network Standard must comply with the provisions of this Network Standard, and in particular:

- (i) The owner of the crane or plant and the person having immediate control of the operation of the crane or plant, must ensure that the relevant provisions of this Network Standard are complied with, and in any case must not hinder, obstruct or attempt to prevent the provisions of this Network Standard being complied with.
- (ii) The safety observer and the operator of the crane or plant must exercise due diligence to ensure that the relevant provisions of this Network Standard are complied with.
- (iii) A person or an organisation requesting or approving work under contract, by agreement or otherwise, must as far as is practicable ensure that the relevant provisions of this Network Standard are complied with, and in any case must not hinder, obstruct or attempt to prevent the provisions of this Network Standard being complied with.

10 PERSONNEL IN CONTACT WITH THE CRANE, LOAD OR PLANT

a) General

Except as provided in this Clause no one may be instructed or allowed to remain in contact with any part of a crane, load or plant and the ground or earthed situation during the period the crane or plant is being operated under the provisions of this Network Standard.

b) The Operator

The operator may operate the controls of cranes or plant while standing on the ground or while in contact with an earthed situation only if one or more of the following provisions are complied with:

- (i) The controls are effectively insulated in accordance with Clause 15.
- (ii) The operator wears insulating gloves where the voltage of any overhead electrical apparatus does not exceed 1000 volts.
- (iii) The operator stands on an equipotential metallic mat which is electrically connected to all metalwork associated with the controls.

c) Personnel On The Worksite

Personnel on the worksite may contact the crane, plant or load while standing on the ground or while in contact with an earthed situation only under the following conditions:

- (i) The direct or indirect personal contact with a load consisting of a wood pole where the voltage of any overhead electrical apparatus does not exceed 1000 volts
- (ii) The holding of a non conductive tail rope which is used to control movement of the load
- (iii) The positioning or removal of gear from a crane hook or the load
- (iv) The adjusting of outriggers, jacks, packings, chocks or the like which is done without movement of a crane or load
- (v) The situation where effective insulation is provided on the electrical apparatus, the crane, load or plant or the component parts, such that should contact occur with the electrical apparatus, personnel would not be subject to electric shock
- (vi) The situation where the voltage of any overhead electrical apparatus does not exceed 1000 volts and insulating gloves are worn

11 STABILITY OF THE CRANE, LOAD OR PLANT

Where by any reason of terrain, prevailing weather or the functional behaviour of the crane, load or plant the danger of inadvertent contact with electrical apparatus may be reasonably foreseen, appropriate measures must be taken to avoid such contact. Such appropriate measures may include one or more of the following precautions:

- (a) The ground or surface upon which the appliance or load is required to move must be prepared so as to minimise upward surge or inertia actions.
- (b) The slewing, luffing or other motion of a crane must be mechanically prevented from being moved by power within the clearances permitted by this Network Standard.
- (c) The jib, boom, or other member likely to contact electrical apparatus as a result of surge or inertia of the appliance must be mechanically constrained from so doing.
- (d) The load must be controlled by non-conductive tail ropes at all times where uncontrolled sway or tilt could cause encroachment on the minimum approach distances prescribed by this Network Standard.

12 WARNING – VOLTAGES INDUCED BY ELECTRIC FIELDS

When working in proximity to voltages exceeding 132,000 volts, precautions against any hazards caused by induced voltages should be taken by the owner or operator of the crane or plant in accordance with any instructions given by the organisation that owns, operates, leases or maintains the electrical apparatus.

13 MINIMUM APPROACH DISTANCES TO LIVE ELECTRICAL APPARATUS

(a) Cranes, Plant, Loads and Appointment of Safety Observer

- (i) Except where effective insulation is provided in accordance with this Network Standard, and where required under Clause 3 approval has been granted, cranes, loads, plant and component parts must not approach closer to live electrical apparatus than the minimum approach distances appropriate to the voltage provided in Column B of Table A.
- (ii) A safety observer required under Clause 7 must be appointed at any time the crane, plant or load is in motion and is likely to move within the distances provided in Column C of Table A.

THESE APPROACH DISTANCES APPLY ONLY WHEN WORKING UNDER THE CONDITIONS OF THE INTERIM GUIDE FOR OPERATING CRANES & PLANT IN PROXIMITY TO OVERHEAD POWER LINES, USING A TRAINED SAFETY OBSERVER

FOR DEFINITIONS OF ELECTRICAL AND NON-ELECTRICAL WORK, SEE CLAUSE 1.2 OF THE GUIDE

TABLE A

MINIMUM APPROACH DISTANCES OF CRANES PLANT AND LOADS TO LIVE ELECTRICAL APPARATUS

NOMINAL VOLTAGE A	**MINIMUM APPROACH DISTANCE USING AN OBSERVER B		**MINIMUM APPROACH DISTANCE WITHOUT AN OBSERVER C	
	ELECTRICAL WORK	NON ELECTRICAL WORK	ELECTRICAL WORK	NON ELECTRICAL WORK
Up to 1 000V	500mm	1000mm	1000mm	3000mm
Above 1 000V but not exceeding 11 000V	700mm	1200mm*	1400mm	3000mm
Above 11 000V but not exceeding 66 000V	1000mm	1500mm	2000mm	3000mm
Above 66 000V but not exceeding 132 000V	1500mm	2000mm	3000mm	3000mm
Above 132 000V but not exceeding 220 000V	2500mm	3000mm	5000mm	6000mm
Above 220 000V but not exceeding 330 000V	3000mm	3500mm	6000mm	6000mm
Above 330 000V	4000mm	4500mm	8000mm	8000mm

*For rail traction systems of nominal 1500VDC the minimum approach distance for non electrical work may be reduced from 1200mm to 1000mm.

**See also Clause 13(c).

(b) Personnel and Hand Held Tools

Personnel carrying out any work associated with a crane or plant and persons carrying out work from an elevating work platform must not allow any part of their body or take any hand held tools or equipment not insulated for the voltage concerned closer to exposed live electrical apparatus than the minimum approach distances specified in Table B.

Electrical tradespersons and people who are qualified to work on overhead electrical apparatus, or who are undergoing a course of training for such qualification may work to the minimum approach distances provided in Column B of Table B and may approach closer than those distances when recognised safe working procedures are adopted. Personnel who are not qualified to work on overhead electrical apparatus must at all times work to the minimum approach distances provided in Column C of Table B.

TABLE B
MINIMUM APPROACH DISTANCES OF PERSONNEL AND HAND HELD TOOLS
TO LIVE ELECTRICAL APPARATUS

NOMINAL VOLTAGE A	** MINIMUM APPROACH DISTANCES FOR PERSONNEL AND HAND HELD TOOLS	
	QUALIFIED PERSONNEL B	UNQUALIFIED PERSONNEL C
Up to 1000	500mm	1000mm
Above 1000V but not exceeding 11 000V	700mm	1200mm*
Above 11 000V but not exceeding 66 000V	1000mm	1500mm
Above 66 000V but not exceeding 132 000V	1500mm	2000mm
Above 132 000V but not exceeding 220 000V	2500mm	3000mm
Above 220 000V but not exceeding 330 000V	3000mm	3500mm
Above 330 000	4000mm	4500mm

**See also Clause 13(c).

(c) General Provisions

- (i) Electrical apparatus which has a plastic or rubber covering must not be regarded as being effectively insulated in accordance with Clause 15 unless the plastic or rubber covering has been confirmed as being effective insulation by Ausgrid.
- (ii) Where two or more voltages are located on the electrical apparatus the minimum approach distance appropriate to each of the voltages must be maintained at all times.
- (iii) During work near live overhead electrical conductors which are supported on poles or other structures, all distances given in the tables to Clause 13(a) and 13(b) must be increased horizontally by the distance the conductor may swing at the point of work.
- (iv) Where the minimum approach distance provided in this Clause cannot be maintained or the provisions of this Network Standard cannot be complied with, the electrical apparatus may need to be de-energised by agreement with Ausgrid, to allow safe operation of the crane or plant in accordance with the Electrical Safety Rules (ESRs). Work must not proceed unless the electrical apparatus has been de-energised and made safe.

14 EFFECTIVE INSULATION OF ELEVATING WORK PLATFORMS

For the purposes of Clause 13 of this Network Standard, an elevating work platform must be regarded as being insulated only if the work basket is fully insulated to prevent inadvertent exposure to persons on the work basket to a difference of potential between the structural components of the work basket, and the insulation of the elevating work platform complies in other regards to Australian Standard 1418.10 entitled SAA Crane Code - Elevating Work Platforms.

15 EFFECTIVE INSULATION OF MECHANICAL AND ELECTRICAL APPARATUS

- (a) Any electrical apparatus or crane or plant, including the controls, or any load carried or moved by such crane or plant or any tools may be considered to be insulated only if the electrical apparatus, the crane, plant, controls, load, or tools comply with the insulation requirements of a relevant Australian Standard;
- (b) If a relevant or suitable Australian Standard does not exist then Ausgrid may approve the insulation and the conditions of its use for the electrical apparatus, the crane, plant, controls, load or tools for the purposes of this Network Standard.

16 TESTING OF THE INSULATION

- (a) Where the crane, plant, tools or insulating material are to be considered effectively insulated for the voltage concerned in terms of this Network Standard, the owner or the organisation responsible for the operation of the crane, plant, tools or insulating material must ensure that such tests are carried out as are necessary to ensure that the integrity of the insulation is maintained.
- (b) The tests required under Part (a) of this Clause must where appropriate comply with a relevant Australian Standard.
- (c) The tests required under Part (a) of this Clause must be carried out as often as necessary to ensure the insulation is effective, with particular attention being given to situations where the insulation is subject to contamination or damage. In any case the interval between tests should not exceed six months.

17 DOCUMENTATION AND RECORDS TO BE MAINTAINED

- (a) A person or organisation providing the training, refresher training or competency assessment required by this Network Standard must provide written certification to the person who has successfully completed such training or assessment.
- (b) The owner of the crane or plant or the employer of employees engaged on the work whether by contract or otherwise must maintain –
 - (i) a record of all approvals and notifications required by this Network Standard.
 - (ii) a record of all employees who have been trained, assessed or who hold appropriate qualifications or accreditation required by this Network Standard.
 - (iii) where the crane or plant is required or deemed to be insulated, a record carried on the crane or plant or an attachment fitted to it, indicating the date of the most recent electrical test carried out on it and the voltage at which it is to be rated.
- (c) A person or organisation requesting or approving the work under contract, by agreement or otherwise, must satisfy itself by agreement or otherwise that records have been maintained of –
 - (i) all approvals and notifications required by this Network Standard.
 - (ii) the appropriate training, competency assessment, qualifications or accreditation of all persons engaged on the work as required by this Network Standard.
 - (iii) all cranes and plant to be engaged on the work, and any electrical tests carried out on them.

18 DEFINITIONS

For the purposes of this Network Standard, the following definitions apply:

competency means the possession and application of both knowledge and skills to defined standards, expressed as outcomes, that correspond to relevant workplace requirements and other vocational needs. (AQF Advisory Board, 1998)

crane means any type of crane, including an elevating work platform, whether independent or an integral part of another piece of equipment (including an agricultural tractor), or any other apparatus used or capable of being used for raising, lowering, handling or transporting materials or equipment in a similar manner, and includes any supporting structure and any other equipment ancillary to the use of the crane or apparatus.

earth moving machine means an item of plant used for the purpose of excavating, transporting, unloading compacting or spreading earth, overburden, rubble, spoil, paving material, aggregate or similar material and includes a back hoe and a bulldozer.

electrical apparatus means -

- a) any live aerial electrical conductor which is not effectively insulated or guarded.
- b) any plant in which there are live conductors used or designed for the conveyance of electricity, being bare conductors which are not effectively insulated or guarded.

but does not include any electrical apparatus where the difference in potential between its conductors, or to earth, does not exceed 50 volts AC or 120 volts DC.

electrical tradesperson means a person who holds a certificate in Electrical Engineering or who has completed a recognised apprenticeship in the electrical trade or who holds a licence or certificate issued by a statutory body which allows the person to carry out limited or unlimited electrical work and for the purposes of this Network Standard includes persons holding an electrical degree or diploma acceptable for admission to the Institution of Engineers Australia.

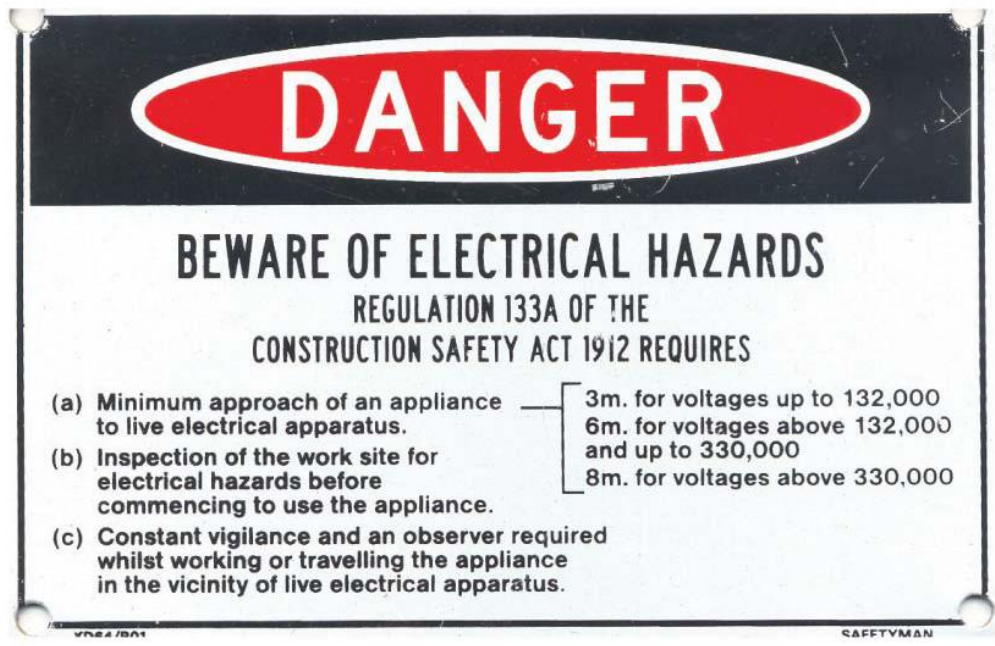
elevating work platform means a telescoping device, scissor device, or articulating device or any combination of those devices used to move and position personnel, equipment and materials to and from or at work locations above or below the support surface.

hoist means any type of powered hoist, whether independent or an integral part of another piece of equipment, or any other powered apparatus used or capable of being used for raising or lowering materials or equipment or other loads in a similar manner (including any inclined skid or slipway, a tilter, any machine used for boring holes in soil or rock and any machine used for or capable of being used for driving or pulling down any pile), and includes any supporting structure and any other equipment ancillary to the use of the hoist or apparatus.

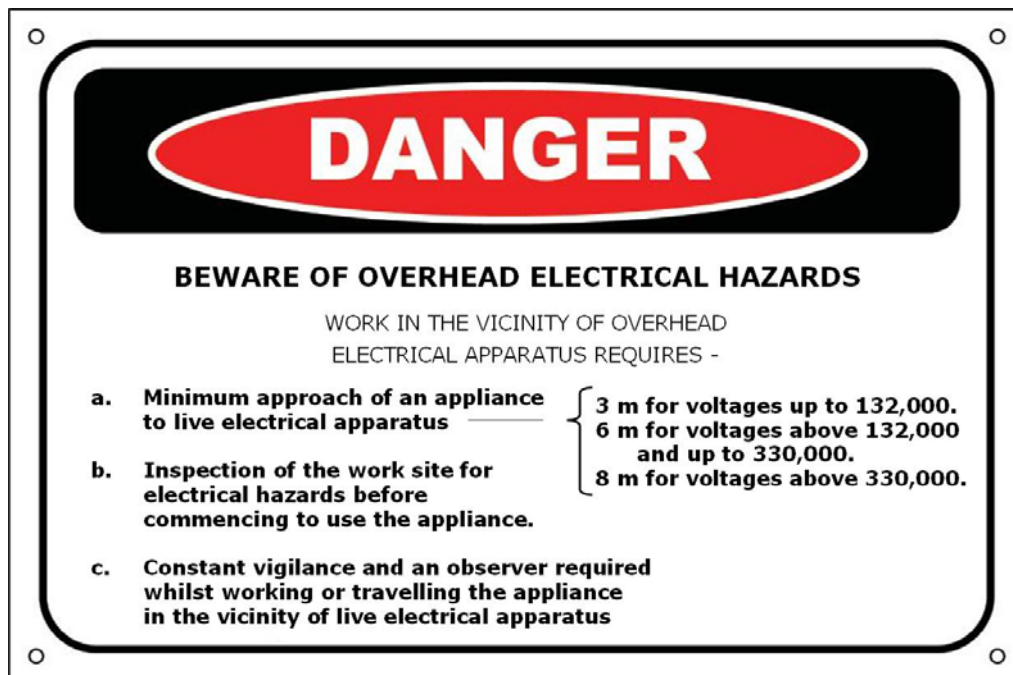
load means any substance, material or object being moved, carried, lifted or supported or which is in rotary or vertical motion, in association with a crane or plant, excluding persons and hand-held tools located on an elevating work platform.

plant includes any powered machinery, equipment, earth moving machine, hoist or appliance, and any article designed for use as a component in, or as an accessory to, any powered machinery, equipment or appliance, but excludes hand tools and powered hand tools.

APPENDIX A – WARNING NOTICE FOR ELECTRICAL HAZARDS



Existing plate fitted to cranes & plant commissioned before July 2001



*Alternative plate for cranes & plant
(Dimensions 150 mm wide, 100 mm high, except if small plant item)*

APPENDIX B – WARNING NOTICES - PROVISIONS OF THIS NETWORK STANDARD

Notice 1: to be installed at each set of controls adjacent to the notice shown in Appendix A:

EITHER: in the case of equipment commissioned before July 2001, the existing notice installed under the provisions of the former Certificate of Exemption No. 5099,

OR: in the case of equipment commissioned after July 2001, the notice below:

CONDITIONS FOR REDUCED CLEARANCES FROM ELECTRICAL APPARATUS

The interim Guide for Operating Cranes & Plant in Proximity to Overhead Power Lines (published by the Electricity Association of NSW, July 2001) allows for a closer approach to electrical apparatus than the accepted minimum distances of 3 metres for voltages up to 132,000, 6 metres for voltages above 132,000 and up to 330,000, and 8 metres for voltages above 330,000.

Personnel working under the provisions of this Guide must be fully aware of the conditions under which the closer approach is permitted, both during travelling to and at the work site.

Where a copy of the Guide is not provided or available on the crane or plant, the information should be sought from the person in charge of carrying out the work.

Tables A and B: to be fixed below Notice 1 (or combined with it), or, if space is insufficient, adjacent to the operating controls in an easily read position.

EITHER: in the case of equipment commissioned before July 2001, the existing notices installed under the provisions of the former Certificate of Exemption No. 5099,

OR: in the case of equipment commissioned after July 2001, the notices below:

THESE APPROACH DISTANCES APPLY ONLY WHEN WORKING UNDER THE CONDITIONS OF THE INTERIM GUIDE FOR OPERATING CRANES & PLANT IN PROXIMITY TO OVERHEAD POWER LINES, USING A TRAINED SAFETY OBSERVER

FOR DEFINITIONS OF ELECTRICAL AND NON-ELECTRICAL WORK, SEE CLAUSE 1.2 OF THE GUIDE.

TABLE A

MINIMUM APPROACH DISTANCES OF CRANES PLANT AND LOADS TO LIVE ELECTRICAL APPARATUS

NOMINAL VOLTAGE A	**MINIMUM APPROACH DISTANCE USING AN OBSERVER B		**MINIMUM APPROACH DISTANCE WITHOUT AN OBSERVER C	
	ELECTRICAL WORK	NON ELECTRICAL WORK	ELECTRICAL WORK	NON ELECTRICAL WORK
Up to 1000V	500mm	1000mm	1000mm	3000mm
Above 1000V but not exceeding 11 000V	700mm	1200mm*	1400mm	3000mm
Above 11 000V but not exceeding 66 000V	1000mm	1500mm	2000mm	3000mm
Above 66 0000V but not exceeding 132 000V	1500mm	2000mm	3000mm	3000mm
Above 132 000V but not exceeding 220 000V	2500mm	3000mm	5000mm	6000mm
Above 220 000V but not exceeding 330 000V	3000mm	3500mm	6000mm	6000mm
Above 330 000V	4000mm	4500mm	8000mm	8000mm

*For rail traction systems of nominal 1500VDC the minimum approach distance for non electrical work may be reduced from 1200mm to 1000mm.

**See also Clause 13(c).

THESE APPROACH DISTANCES APPLY ONLY WHEN WORKING UNDER THE CONDITIONS OF THE INTERIM GUIDE FOR OPERATING CRANES & PLANT IN PROXIMITY TO OVERHEAD POWER LINES, USING A TRAINED SAFETY OBSERVER

FOR FURTHER INFORMATION REFER TO THE GUIDE.

TABLE B

MINIMUM APPROACH DISTANCES OF PERSONNEL & HAND HELD TOOLS TO LIVE ELECTRICAL APPARATUS

NOMINAL VOLTAGE	** MINIMUM APPROACH DISTANCES FOR PERSONNEL AND HAND HELD TOOLS	
	QUALIFIED PERSONNEL B	UNQUALIFIED PERSONNEL C
A		
Up to 1000	500mm	1000mm
Above 1000V but not exceeding 11 000V	700mm	1200mm*
Above 11 000V but not exceeding 66 000V	1000mm	1500mm
Above 66 000V but not exceeding 132 000V	1500mm	2000mm
Above 132 000V but not exceeding 220 000V	2500mm	3000mm
Above 220 000V but not exceeding 330 000V	3000mm	3500mm
Above 330 000	4000mm	4500mm

*For rail traction systems of nominal 1500VDC the minimum approach distance for non electrical work may be reduced from 1200mm to 1000mm.

**See also Clause 13(c).



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Revision History

Initial issue:

25/02/2008

Document Control

Authorised By: Terry Lampard

Date: 22 Feb 2008

for Executive Manager Major Projects and Engineering

Document Number: NS 209